DUAL PRODUCT PROCESS TO TO HANDLE STANDARD ORES

Prof. Nicholson Explains the Results of Exhaustive Tests of Copper, Gold and Cobalt Made in Denver Recently.

On exhibition at the office of the Killen, Warner, Stewart compay are six bottles of Standard ore samples, showing the various stages of analyses and tests recently made by Professor H. H. Nicholson at Denver.

The tests were made by Professor Nicholson, who is consulting engineer and general western mine manager for the company, to determne the most officacious process for saving the high cobalt-gold-copper values in Standard ore. One thousand pounds of ore were used in the tests. Concentration, with adual product, was the process evolved. The first product, which is of coarse grain, carries the main cobalt-gold values in the following proportion: Cobalt, seventeen to eighteen per cent; gold $56 per ton; total value of concentrates, $270 per ton.

The second product carries eight per cent cobalt, some gold, and nearly all of the copper contained in the ore, the total value being $219 per ton.

The third product represents the tailings from the Wilfley concentrating tables, used in the process, and carry an infinitesimal percentage of cobalt, and a trace of gold, with a total value of $7 per ton.

The forth product represents the slimes, whose value is less than ninety eight cents per ton, showing the extraordinary saving effected by the dual product process.

Very little, if any, silica is contained in the first product.

Professor Nicholson personally made the tests in a Denver plant. They were so thorough and exhaustive that he undertakes to reproduce exact results in practice.

Professor Nicholson expects to visit the Standard next week—probably Tuesday.

PRODUCTION OF PRECIOUS STONES

The report entitled "The Production of Precious Stones in 1903," which George F. Kunz has recently prepared for the United States Geological Survey, contains a summary of the most recent discoveries of gems throughout the world and descriptions of their latest uses in jewelry.

Within the year important and extensvie developments in diamond mining have been made in the Transvaal district, and it is clear that diamond depos,ts of a character similar to those of Kimberley and of very promising richness exist throughout a wide area lying east of Pretoria. Many mines have been located, and about 100 prospecting shafts have been sunk to different depths to test the nature and the extent of the deposits. Among the mines actually in operation, by far the most important is the Premier, which should not be confounded with the De Beers Premier. Its output is superior in yield per load to that of the De Beers property, but the diamonds bring only about $6.75 per carat, while the De Beers Kimberley stones are worth $11.62 per carat.

Considerable interest has lately been manifested in the mining of beryls and tourmalines in the province of Minas Geraes, Brazil, where a number of remarkable blue and green beryls have been obtained. One of the green beryls was a crystal that weighed 18 2-3 pounds, more than twice the weight of the great beryl in the Imperial Academy Mining School at St. Petersburg Russia, which is valued at $13,000. During 1903 a remarkable discovery of blue beryls was made near Rio de Janeiro. These were deep blue crystals, from which single gems were cut that weighed 100 carats each. At Villa Rica two dozen magnificent crystals of euclase were found which measured from two-fifths to 1⅓ inches.

Among the various green minerals used by the ancients for decorative purposes, compact fuchsite must now be included. Mr. Kunz quotes Professor H. A Miers, of London, who has studied the fragment of a Roman statuete composed of this material and believes that it was probably one of the many kinds of so-called smaragdus. Pliny's descripttion of one variety of this mineral is suggestive of this compact emerald fuchsite

The peridotitic dikes of Elliot county, Kentucky, which at one time were considered a possible source of diamonds, because of special resemblance in their occurrence to the rock at Kimberley, South Africa, have recently yielded some fine pyrope garnet and olivine of gem quality. Some pyropes have also been obtained from a similar periodtitic dike at Highland street, Syracuse, New York.

The chapter on spodumene, hiddenite, and kunzite is one of the most interesting in the report. The finding of the new variety of the transparent lilac spodumene in California (which was christened kunzite, after the author of this report) is one of the most notable discoveries of a gem mineral that has been made in a long time. It not only adds a novel and elegant stone of purely American production to those used in jewelry, but a stone that has great scientific interest from the remarkable properties it posseses in connection with the action of Roentgen (or X) rays and those of ardium and like substances. These large and beautiful crystals were first obtained early in 1903, close to a deposit of colored tourmaline, itself of notable interest, a mile and a half northeast of Pala, in San Diego county, California crystals resemble the spodumene from North Carolina, but for beauty, transparency, and great size of perfect material they are not equalled by those obtained from any known locality.

A discovery has lately been made in the Sunrise mine, near Hartville, Laramie county, Wyoming, of a beautiful mineral association, consisting of a brilliant coating of quartz crystals ovre a blue or greenish-blue copper silicate. This quartz is generally thick enough to take a polish and makes a very pleasing ornamental stone.

A magnificent series of agate and chalcedony specimens, ranging from two to six inches in length and four inches across, beautifully polished, was shown in the exhibit of the state of Texas at the Louisiana Purchase Exposition. These agates were found in a great many places in the counties of Pecos, Brewster, Presidio, Jeff Davis, and El Paso. Large masses of moss agate have been discovered in the Hartville mining district, about 130 miles north of Cheyenne, Wyoming. More than seven tons of it were mined during the year 1903 and sent to Germany for cutting.

Mr. Kunz's report is an extract from the survey's forthcoming volume "Mineral Resources of the United States, 1903." It is also published in separate form and may be obtained on application to the Director of the United States Geological Survey, Washington, D. C.

MILL FOR THE DIXIE.

Zoeth Houser has purchased through the Basche-Sage Hardware company a five-stamp quartz mill for his Dixie mine near Quartzburg. The purchase was concluded in this city last evening, Peter Basche, president of the company, being here for that purpose. The machinery is in various lots, a morter being at the Sumpter Valley depot, stamp dies, camshafts, battery frame, and miscellaneous equipment being located in other parts of the camp. It will be gathered together this week and shipped to Tipton by rail for transportation by wagon thence to Quartzburg. A steam plant and rock crusher are already installed at the Dixie mine, and Mr. Houser expects to have the entire milling plant in operation within thirty days.

The Dixie group consist of six claims, developed by about 600 feet of tunnels. A magnificent vein of free-gold ore has been opened up, and a force of miners is now busy taking out ore in the prearation for milling operations.

Mr. Houser, owner of the Dixie, is also a heavy stockholder in the Standard mine, a contiguous property.

To a Miner man Mr. Houser said today that the new mill will begin crushing ore in about thirty days. The initial run will be on exceptionally rich rock, a large lot assaying as high as $1,800 per ton.

Geiser Leases Dell Group.

Albert Geiser, of the Geiser-Henryx Investment company, has taken a lease upon the Dell group of mines, in the Sparta district, owned by T. L. Kelly. The terms of the deal have not been made public. The Dell gronp is located near the Gem mine, which is being successfully operated by the Geiser-Hendryx company.

BAROMETER AND UNDERGROUND AIR

Some time since Prof. Lindgren, of the United States geological survey, while engaged in the survey of the Cripple Creek district, found that the atmospheric conditions, as indicated by the readings of an aneroid barometer, had a direct influence upon the conditions of the air underground in mine workings. The normal barometric reading at 10,000 feet, which is approximately the elevation of Cripple Creek, is 20.48 inches. When the barometer indicates a lighter pressure than the normal at any of the mines, it is found that the heavy carbon dioxide settles in the workings and is moved less readily by the ventilating fans, or other means of ventilation.

At the Anchoria-Leland mine a barometer is daily consulted to note any material change in atmospheric pressure. When the night shift leaves the mine here are no workmen underground for several hours. It is the duty of the watchman to note the barometric reading, and if it is lower than the normal he turns steam into the workings at intervals, which has the effect of absorbing the carbon dioxide, and the atmosphere underground is purified.

There are many mines in Cripple Creek in which the air is so bad at times as to seriously interfere with work. At the Anchoria-Leland there has been much loss of time due to bad air. At one time when driving a level the gas entered the mine from fissures in the rocks so as to render further work for the time being impossible. The expedient of lining the drift with tin was tried, but this afforded only temporary relief. Since the introduction of the barometer and the blowing of live steam into the workings at such time as is indicated by low readings of the barometer, the conditions have materially changed for the better. Doubtless there are many places where this ingenious method of watching the air circulation of underground workings maybe adopted with equally satisfactory results.—Mining and Scientific Press.

Golconda Deal at a Standstill.

J. A. Howard returned today from Pendleton, where he went some days since on business pertaining to the reorganization of the Golconda. Regarding that deal, he merely confirms what was stated in these columns yesterday, on the authority of Attorney Richards; that thus far no progress has been made in getting the two factions together on the Prussing proposition; that it will have to be modified before any agreement can be reached.